Name: _____ Middle School: _____

What students need to know for…….

Grade 9 Algebra 1

Students expecting to take Algebra 1 next year at Lowell High should demonstrate the ability to:

General:

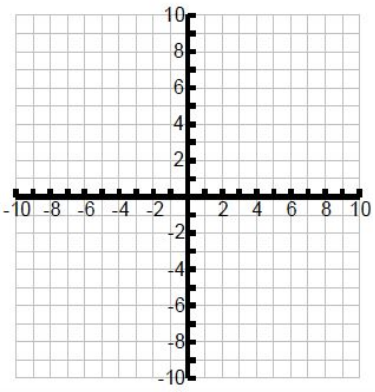
- Keep an organized notebook
- Be a good note taker
- Complete homework every night
- Be active learners
  - Ask questions and participate in class
  - Seek help outside of class if needed
- Work with others
- Work with and without a calculator

Specific math skills:

- Work with fractions, decimals, and integers comfortably
- Solve various types of equations
  - One-step/two-step
- Identify different functions using multiple representations
  - Table/equation/graphically
  - Linear/quadratic/absolute value
- Solve ratios and proportions
- Understand exponents and roots

Lowell High School Summer Readiness Packet
(Algebra 1)

Please show all your work.

1. $\sqrt{7}$ is between what two consecutive integers?	2. $2^3 \times 2^4 = 2^p$ What is the value of p?	3. $x^3 = 8$ Find the value(s) of x.
4. Simplify: $\sqrt[3]{27}$	5. Graph both equations and compare the rate of change in both graphs. a. $y = 2x + 1$ b. $y = \frac{1}{4}x - 2$ 	6. Simplify: $-3 + 8 \div 2 + 7$
7. Simplify: $-7(2) - (-12)$	8. Simplify: $5x - 3x + 25 + 16x$	9. Simplify: $3(2x - 4)$

10. Evaluate: $-4x + 5 \ \ for \ x = -2$	11. Evaluate: $x^2 + z^3 \div 2 \ for \, x = 4 \, and \, z = 2$	12. Evaluate: $(2 - 2c) \div 5 \, for \, c = 6$
13. Evaluate: $\lvert m \rvert - \lvert 2n \rvert \ \ for \, m = -12 \ \ and \ \ n = 8$	14. Simplify: $\frac{5^2}{5^4}$	15. Simplify: 4^{-2}
16. Simplify: $m^3 \cdot m^6 \cdot m^{-4}$	17. Simplify: $(n^4)^3$	18. Solve for the unknown: $x + 20.6 = 64.3$
19. Solve for the unknown: $9 = \frac{1}{3}x$	20. Solve for the unknown: $3x - 7 = 8$	21. Solve for the unknown: $4 - x = 7$

22. Solve for the unknown:
$\frac{x}{4} = \frac{5}{20}$

23. Use an equation to model the relationship in the table below:

Games Played	Games Remaining
10	152
50	112
100	62
162	0

24. A checking account had the following activity over a 2-days period: a withdrawal of $35.47, a deposit of $92.63, and a service charge of $2.13. If the balance after this activity was $174.13, what was the balance before the activity?

College level STOP HERE

25. Determine which of the following is the lesser quantity and explain why it is less.
$-2\frac{5}{11}$, -2.45

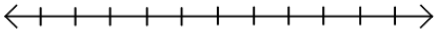
26. Simplify: $(3n^2m^4)^2$

27. Solve for the unknown:
$5(3x - 10) = 40$

28. Solve for the unknown:
$6x - 2 = x + 13$

29. Solve for the unknown:
$7.8y + 2 = 165.8$

30. Solve the inequality and illustrate the solution set on the given number line:
$w - 4 \leq 9$



31. To solve $-\frac{1}{2}(3x-5) = 7$, you can use the Distributive Property, order of operations, or you can multiply each side of the equation by -2. Which method do you prefer? Explain why?

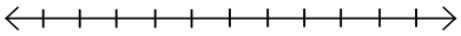
32. Find the mistake in this solution. Explain the mistake and show how to solve the problem correctly.

$$2x = 11x + 45$$
$$2x - 11x = 11x - 11x + 45$$
$$9x = 45$$
$$\frac{9x}{9} = \frac{45}{9}$$
$$x = 5$$

33. Determine whether this relation is a function or not a function
$\{(3,7),(3,8),(3,-2),(4,5),(0,2)\}$

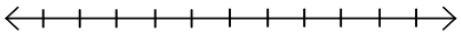
34. Determine whether this relation is a function or not a function
$\{(2,5),(3,-5),(4,5),(5,-5)\}$

35. Solve the inequality and illustrate the solution set on the given number line:
$1 - 4x \geq 4 - x$



36. Solve for the unknown:
$10z - 5 + 3z = 8 - z$

Honors level STOP HERE

37. Solve the equation and justify each step using appropriate mathematical language. If this equation has no solution, explain why. $2(3x - 6) = 3(2x - 4)$	38. Solve the inequality and illustrate the solution set on the given number line: $-2(0.5 - 4x) \geq -3(4 - 3.5x)$ 	39. Write an equation in slope-intercept form for the line that passes through the following points: $(6,-4),\ (-3,5)$
40. Write an equation in slope-intercept form for the line that passes through the following points: $(3,-8),\ (-2,5)$.	41. Evaluate $f(x) = 15 - x \ when \ x = -3$	42. Elvaulate $g(x) = x^2 + 2 \ when \ x = -5$

Videos that may help	
Solving Equations and Inequalities	• Solving One Step Equations • Solving Two Step Equations • Solving Equations with Variables on Both Sides • Different Types of Solutions Equations Can Have
Simplifying and Evaluating Expressions	• Combining Like Terms • Distributive Property • Evaluating Expressions
Exponent Rules	• Multiplying & dividing powers • Powers of products & quotients
Functions and Function Notation	• Relations and Functions • Function Notation • Function Notation
Writing the Equation of a Line	• Finding Slope from Coordinates • Writing Lines in Slope Intercept Form